

1. A microduct structure to provide temperature management to a device, comprising:
  - an upper plate, wherein the upper plate contains a bottom surface forming a top portion and sides of the microduct structure; and
  - a lower wall forming a bottom portion of the microduct structure, wherein the lower wall is adapted to be coupled to a top surface of the device;
  - wherein the microduct structure has a height and a width, wherein the width of the microduct structure has an order of magnitude of length greater than the height of the microduct structure.
2. The structure of claim 1, further comprising:
  - an inlet and an outlet capable of accepting a coolant, wherein the inlet and outlet are communicatively coupled to the microduct structure.
3. The structure of claim 1, further comprising:
  - one or more cooling fins attached to a top surface of the upper plate.
4. The structure of claim 2, wherein the bottom surface of the upper plate has a greater height at the inlet of the microduct structure and a lower height at the outlet of the microduct structure to provide greater cooling capability at the end of the microduct structure.
5. The structure of claim 2, wherein the bottom surface of the upper plate has a plurality of ribs protruding into the microduct structure in a direction perpendicular to the direction of flow of the coolant, wherein the lengths of the plurality of ribs vary to provide differential cooling to the electronic device.
6. The structure of claim 6, wherein the plurality of ribs are mapped to a thermal profile of the device.

EXPRESS MAIL LABEL NO.: EV343426451US

7. The structure of claim 2, wherein the bottom surface of the upper plate contains one or more grooves projecting at oblique angles from the bottom surface of the upper plate to introduce greater turbulence to the coolant flow.

8. A microduct structure to provide temperature management to a device, comprising:

a device, wherein a top surface of the device forms a bottom surface of the microduct structure; and

an upper plate, wherein the upper plate has a bottom surface forming a top portion and sides of the microduct structure;

wherein the microduct structure has a height and a width, wherein the width of the microduct structure is on the order of a magnitude of length greater than the height of the microduct structure.

9. The structure of claim 9, further comprising:

an inlet and an outlet capable of accepting a coolant, wherein the inlet and outlet are communicatively coupled to the microduct structure.

The structure of claim 10 where the inlet and outlet of the microduct structure have a height that is up to two orders of magnitude greater than the height of the microduct structure.

10. The structure of claim 9, further comprising small structures etched into the top surface of the device.

11. The structure of claim 9, further comprising small structures deposited onto the top surface of the device.

12. The structure of claim 11, wherein the small structures form one or more rows of small rails.

13. The structure of claim 11, wherein the small structures form one or more rows of fins.

EXPRESS MAIL LABEL NO.: EV343426451US

14. The structure of claim 12, wherein the small structures deposited onto the top surface of the electronic device include one or more geometric shapes of metal, wherein the geometric shapes of metal are shapes selected from the group consisting of disks, squares and rectangles.

15. The structure of claim 9, wherein the top surface of the electronic device is etched to form an uneven surface.

16. The structure of claim 9, wherein the top surface of the electronic device is sandblasted to form an uneven surface.

17. The structure of claim 9, wherein one or more grooves are etched into the top surface of the electronic device.

EXPRESS MAIL LABEL NO.: EV343426451US

18. A computer system, comprising:

a processor including a top surface;

a microduct structure for providing temperature management to the processor, wherein the microduct structure has a height and a width and wherein the width of the microduct structure has an order of magnitude of length greater than the height of the microduct structure; and

an upper plate adjacent to the processor, wherein a bottom surface of the upper plate forms a top portion and sides of the microduct structure and the top surface of the processor forms a bottom portion of the microduct structure.